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standpoint if our medical schools and hospitals, our veterinary hospitals and even our cat and dog hospitals and other places for the care of sick animals could all be concentrated in one institution for the broad study of disease. This indeed is now being attempted in certain institutions and no doubt will result in a broader conception of pathology.

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**INVESTIGATIONS AT THE WOODS  
HOLE BIOLOGICAL STATION  
OF THE UNITED STATES  
BUREAU OF FISHERIES**

THE laboratory of the Woods Hole Biological Station of the United States Bureau of Fisheries opened for the season's operations on June 19, under the directorship of Dr. P. H. Mitchell of Brown University. The various investigators are: Dr. W. W. Browne, of the College of the City of New York, who is studying various phases of bacteriology of fishes including bacterial changes during cold storage and the occurrence of pollution bacteria in food fishes; Dr. I. A. Field, of Clark University, who is completing a comprehensive report on the biology and economic value of the sea mussel and is conducting investigations on its embryology; Dr. C. W. Hahn, of the New York City High School of Commerce, who is studying sporozoan parasites of fishes with especial reference to modes of infection; Dr. Edwin Linton, of Washington and Jefferson College, who is studying fish parasites and the food of certain fishes; Dr. Sergius Morgulis, formerly of the College of Physicians and Surgeons, who is continuing researches on the metabolism of fishes; and Dr. G. G. Scott, of the College of the City of New York, who is studying the oxygen requirements of various marine forms and the oxygen consumption of developing fish embryos. The scientific assistants are: Mr. A. E. Barnard, of Brown University, who is working with the director on the nutrition of

oysters; Mr. R. L. Barney, of Brown University, who is aiding the director in the study of diatoms of green gill oysters and the life history of sporozoan parasites; Mr. F. R. Dieuaide, of the College of the City of New York, who is assisting Dr. Scott and is making a collection of Woods Hole marine flora; Mr. E. W. Fuller, of Amherst College, who is assisting Dr. Morgulis; and Mr. K. S. Rice, of Brown University, who is assisting the director in the study of the food supply of oysters.

The facilities of the laboratory have also been extended to the following table applicants: Dr. N. A. Cobb, of the Department of Agriculture, and the Misses Cobb and Mr. Alfred Steinberg, who are assisting Dr. Cobb in the study of the physiology of nematodes; Dr. S. A. MacCallum, of New York City, who is investigating fish parasites, especially the helminthes; Dr. Albert Mann, of the Department of Agriculture, who is studying the diatom flora of the Woods Hole region; Dr. A. M. Reese, of West Virginia University, who is investigating light reactions of *Diemyctylus*; Mr. A. C. Redfield, of Harvard University, who is studying the melanophores of lower vertebrates especially in relation to adrenal glands of fishes; Mrs. A. C. Redfield, who is studying respiration in lamellibranchs; Dr. F. P. Reagan, of Princeton University, who is studying the development of *Fundulus heteroclitus*; and Mr. C. C. Speidel, of Princeton University, who is sharing a table with Dr. Reagan, and is investigating the function of certain peculiar cells of the spinal cord of the skate. The facilities of the laboratory will also be granted, during September, to Dr. F. C. Weber and assistants, from the Bureau of Chemistry, for investigations concerning copepods as food for sardines. The laboratory closes on September 15.

P. H. MITCHELL

WOODS HOLE, MASS.,  
August 29, 1916

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**SCIENTIFIC NOTES AND NEWS**

THE American Astronomical Society met in the Sproul Observatory, Swarthmore College,

from August 30 to September 2, with Dr. E. C. Pickering in the chair.

DR. THOMAS H. MACBRIDE has been elected president emeritus of the State University of Iowa, on his retirement from the presidency which he accepted two and a half years ago. Dr. Macbride had been assistant professor and professor of botany in the university since 1878.

DR. L. H. BAEKELAND has been appointed to represent the American Chemical Society on the Natural Research Council being organized by a committee of the National Academy of Sciences.

THE Alvarenga prize this year in Brazil was awarded to G. Riedel, chief of the biologic chemistry service at the Hospicio Nacional and instructor at the university. His work described researches on the protective ferments, and a process for determining the specific ferments by superficial tension.

PROFESSOR CHARLES RICHET, of the University of Paris, has been awarded the state prize for poetry. The subject was "The Glory of Pasteur."

WE learn from *Nature* that Dr. A. Lauder, of the Edinburgh and East of Scotland College of Agriculture, has been elected honorary secretary of the Edinburgh and East of Scotland section of the Society of Chemical Industry, in succession to Dr. J. P. Longstaff, now general secretary of the society in London.

DR. HERBERT R. BROWN has resigned from the position of assistant director of the Massachusetts State Department of Health to accept an appointment as pathologist at the Rochester Homeopathic Hospital at Rochester, N. Y.

THE position of assistant botanist to the Missouri Botanical Garden has been filled by the appointment of Mr. J. C. Th. Uphof, for the past three years assistant professor of botany at the University of Arizona.

ON the initiative of the Royal Society a Board of Scientific Societies has been established in Great Britain to promote the cooperation of those interested in pure or applied science; to supply a means by which the

scientific opinion of the country may, on matters relating to science, industry and education find effective expression; to take such action as may be necessary to promote the application of science to industries and to the service of the nation; and to discuss scientific questions in which international cooperation seems advisable. The board at present consists of representatives of twenty-seven scientific and technical societies. An executive committee has been appointed, consisting of Sir Joseph Thomson, O.M., president of the Royal Society, chairman; Dr. Dugald Clerk, F.R.S., Sir Robert Hadfield, F.R.S., Mr. A. D. Hall, F.R.S., Professor Herbert Jackson, honorary secretary, Sir Alfred Keogh, K.C.B., Sir Ray Lankester, K.C.B., F.R.S., Professor A. Schuster, secretary of the Royal Society, Sir John Snell, Professor E. H. Starling, F.R.S., Lord Sydenham, F.R.S. and Mr. R. Threlfall, F.R.S. The first meeting of the board was held on July 20, when questions relating to scientific, educational and industrial matters were under consideration.

THE American Association for Clinical Research will hold its eighth annual meeting in New York, September 28, 29 and 30, with headquarters at the Hotel Majestic. There will be three sessions each day, morning, afternoon and evening. Clinics will be held at the Flower, Metropolitan and other hospitals. Dr. Daniel E. S. Coleman, of New York, is president of the society, and Dr. James Krauss, 419 Boylston Street, Boston, is permanent secretary.

DONALD B. MACMILLAN, who went in 1913 in search of "Crocker Land," will arrive home within a month, according to a message received by the officers of the American Museum of Natural History. His party will be with him, including Dr. E. O. Hovey, who had charge of the relief expedition sent to MacMillan in 1915 on the schooner *George B. Cluett*. The party is expected to reach St. Johns, N. F., between September 20 and October 1. The explorers are returning on the Danish steamer *Danmark*, chartered by the museum from the Greenland Mining Company. They will stop on the way at Thule to pick up

Dr. Hovey and his party, and it was expected that Knud Rasmussen, who has been in Greenland for two years, will join them.

ACCORDING to a press dispatch from Punta Arenas, Chile, Lieutenant Sir Ernest H. Shackleton has rescued the members of his Antarctic expedition who were marooned on Elephant Island. Lieutenant Shackleton returned to Punta Arena on September 3 with his men safe and well on board the rescue ship *Yelcho*. This was the fourth attempt made by Sir Ernest Shackleton to rescue the twenty-two men who had been marooned on Elephant Island since April 24. The other attempts, made during June and July, failed on account of unfavorable ice conditions.

DR. W. G. MACCALLUM, professor of pathology in Columbia University, expects to return to New York this month from a trip to Honolulu, Fiji, New Zealand, Australia, Java, Borneo, Celebes and Sumatra. During this trip, which has lasted since February, he has given some attention to prevailing diseases in these islands.

DR. GEORGE T. MOORE, director of the Missouri Botanical Garden, has returned from a trip, which has lasted since February, he has spent a few days at the biological station of the University of North Dakota, collecting and studying the algæ of that region.

DR. GEORGE W. CRILE, professor of surgery in Western Reserve University, on August 25, gave an illustrated lecture before the graduate school in medical sciences of the University of Illinois, Chicago, on "Exhaustion and Restoration." On August 31, Professor C. R. Bardeen, dean of the medical school of the University of Wisconsin gave a lecture before the school, his subject being "Study of the Anatomy of the Heart in the Living by Use of the X-ray."

PROFESSOR BURTON D. MEYERS, of the University of Indiana, recently gave an illustrated lecture on "The Normal Position of the Human Stomach" to the faculty and students of the Graduate School in Medical Sciences of the University of Illinois.

THE Archangel Society is collecting the sum of \$12,500 to obtain information of two Russian expeditions which sailed in 1912 under Lieut. Brusiloff and M. Rousanoff.

PRESIDENT WILSON has signed the bill recently passed by Congress appropriating \$35,000 for the erection at Washington of a memorial to John Ericsson, inventor of the Monitor and distinguished as an engineer.

PROFESSOR THOMAS GREGOR BRODIE, associated with Professor A. B. Macallum, in the department of physiology of the University of Toronto since 1908, died on August 20, at the age of fifty years. Professor Brodie was in London, where he was serving as a captain in the Canadian Army Medical Corps.

MR. CHARLES DAWSON, who died on August 10 at the age of fifty-two years, was a solicitor, who devoted attention to the fossil remains of reptiles found in the Wealden formations quarried round Hastings, and made a large collection, which he placed in the British Museum. In 1912 he discovered the now famous skull and mandible of *Eoanthropus dawsoni* in a very old gravel at Piltdown.

At the beginning of July, as we learn from *Nature*, a party of thirty men, led by Mr. Birger Johnsson, left Sweden for Spitsbergen in order to work the coal deposits at the head of Bell Sound (Braganza Creek) and Isfjord. At Braganza Creek the coal, though of Tertiary age, is said to be of good burning quality, and there is an average thickness of 2.15 meters over an area of about 100 kilometers. At the Pyramid Hill and in Bünsow's Land, at the head of Isfjord, on the other hand, the coal is culm of Carboniferous age, and is not so good as at Braganza. None the less, these two areas are calculated to yield about 3,000 million tons of good coal. Other members of the expedition are Mr. S. Öhman, who will be responsible for the mapping; Mr. H. Odelberg, agronomist, who will see to the provisioning; Mr. E. Lundström, who will serve as botanist and make a map according to Professor De Geer's photographic method; and a paleontologist, Mr. Erik Andersson, of Upsala, who was recently studying the fossil fishes of Spits-

bergen in the British Museum. Mr. Lundström is taking some plants to see if they will grow there.

### UNIVERSITY AND EDUCATIONAL NEWS

RECOMMENDATIONS that a fund of more than \$3,000,000 for the treatment of cancerous, nervous and disabling ailments be given to the University of Pennsylvania Hospital has been made by Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, Baltimore, who was selected by the trustees of the fund, jointly the incorporated trustees of the Philadelphia Yearly Meeting of Friends and a body organized as the board of managers of the Jeanes Hospital, to come to Philadelphia and make a survey of its hospitals and medical work and give them his opinion as to where the fortune would work the greatest benefit. The fund is the estate and its increment willed for the purpose by Anna J. Jeanes, a noted Friend philanthropist, who died in 1908.

Mr. BLANCHARD RANDALL and Dr. Howard Kelly have presented to the Johns Hopkins Hospital a collection of portraits of medical men said to be of great value. The collection given by Mr. Randall, who is one of the trustees of the institution, consists of forty-eight portraits. Dr. Kelly, who is one of the consulting physicians, added eleven portraits.

Miss S. E. S. MAIR and Mrs. A. M. Chalmers Watson, on behalf of women medical graduates, students and their friends, have offered to pay to the Edinburgh University \$20,000 for the medical education of women.

THE report of President R. S. Hyer to the board of trustees shows that the enrollment of the initial year of the Southern Methodist University reached 706 students, 453 of whom were in the academic department. Over 300 students in the academic department carried science courses during the year. In the choice of a science, chemistry, physics, biology and geology registered practically the same number. The total enrollment is said to establish a new record for the initial year in American universities. The University of Chicago registered 698 in its first year.

Dr. W. W. CORT, Ph.D. (Illinois, '14), professor of biology at Macalester College, St. Paul, Minn., has accepted a position as assistant professor of zoology at the University of California. Dr. H. D. Gould, Ph.D. (Princeton, '16) has been appointed instructor in zoology in place of Assistant Professor J. A. Long on Sabbatical leave.

APPOINTMENTS at the Massachusetts Institute of Technology have been made as follows: Dr. Frederick G. Keyes, associate professor of physico-chemical research; Eugene Olaf Christiansen, instructor in business management; Clarence K. Reiman, instructor in inorganic chemistry; Ernest W. Wescott, research associate in applied chemistry; Robert E. Wilson, research associate in applied chemistry; Charles L. Burdick, research associate in physical chemistry; John G. Barry, instructor in geology and mineralogy, and Alexander Klemin, instructor in aeronautical engineering.

### DISCUSSION AND CORRESPONDENCE

#### THE FUNDAMENTAL EQUATION OF MECHANICS (IV)

IN his paper on "The Accepted Facts of Dynamics,"<sup>1</sup> Professor Hoskins proposes as a sort of challenge a simple problem which he believes can not be solved by means of my fundamental equation  $F/F' = a/a'$  without the aid of a further principle which he calls the *additive property of mass*. This challenge seems to me a fair one, and without reopening the general discussion, I should like to show how easy it is to offer a solution of this problem based entirely on the principles I have set forth as sufficient.<sup>2</sup> The problem is as follows:

A first body,  $A'$ , is observed to have an acceleration  $a'$  when acted on by a force  $F$ ; a second body,  $A''$ , is observed to have an acceleration  $a''$  when acted on by an equal force  $F$ ; if the two are combined into a single body, what acceleration will this body have if acted on by a force  $F$ ?

<sup>1</sup> SCIENCE, June 30, 1916.

<sup>2</sup> SCIENCE, February 5, 1915; July 30, 1915; and especially March 3, 1916. Further discussion of this topic may be expected to appear in the *American Mathematical Monthly*.